January 2003

Test 1830: New Holland TG 230 Diesel

NEBRASKA OECD TRACTOR TEST 1830–SUMMARY 418
NEW HOLLAND TG 230 DIESEL
18 SPEED

Location of Test: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of Test: September 24 - October 27, 2003

Manufacturer: CNH America LLC, 700 State St. Racine, Wi. 53404 USA

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8447 **Fuel weight** 7.033 lbs/gal *(0.843 kg/l)* **Oil SAE** 15W40 **API service classification** SF/CD/CE **Transmission and hydraulic lubricant** New Holland Multi-Tran fluid **Front axle lubricant** SAE 85W-140 API GL-5 **Total time engine was operated:** 24.0 hours

ENGINE: Make Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *46278041* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.488" x 5.315" *(114.0 mm x 135.0 mm)* **Compression ratio** 17.0 to 1 **Displacement** 505 cu in *(8268 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements and prefilter **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 85.5-94.1 lb/h *(38.8 - 42.7 kg/h)* **High idle:** 2395-2485 rpm **Turbo boost:** nominal 21.0 - 25.4 psi *(145 - 175 kPa)* as measured 22.3 psi *(154 kPa)*

CHASSIS: Type front wheel assist **Serial No.** *JAW126803* **Tread width** rear 64.0" *(1626 mm)* to 129.0" *(3277 mm)* front 60.0" *(1524 mm)* to 88.0" *(2235 mm)* **Wheelbase** 129.3" *(3284 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph *(km/h)*** first 1.96 *(3.15)* second 2.24 *(3.61)* third 2.58 *(4.16)* fourth 2.96 *(4.77)* fifth 3.41 *(5.48)* sixth 3.90 *(6.28)* seventh 4.55 *(7.33)* eighth 5.23 *(8.41)* ninth 6.02 *(9.69)* tenth 6.91 *(11.12)* eleventh 7.92 *(12.75)* twelfth 9.09 *(14.63)* thirteenth 11.33 *(18.23)* fourteenth 12.99 *(20.91)* fifteenth 14.98 *(24.11)* sixteenth 17.19 *(27.66)* seventeenth 19.72 *(31.73)* eighteenth 22.61 *(36.39)* reverse 2.81 *(4.53)*, 3.23 *(5.20)*, 6.56 *(10.55)*, 7.52 *(12.10)* **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2000 engine rpm or 1000 rpm at 1984 engine rpm **Unladen tractor mass** 20340 lb *(9226 kg)*

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1109 rpm)					
193.40 *(144.22)*	2200	12.83 *(48.56)*	0.467 *(0.284)*	15.07 *(2.97)*	
Standard Power Take-off Speed (1000 rpm)					
213.61 *(159.29)*	1984	12.82 *(48.51)*	0.422 *(0.257)*	16.67 *(3.28)*	
Maximum Power (2 hours)					
216.31 *(161.30)*	1800	12.24 *(46.33)*	0.398 *(0.242)*	17.67 *(3.48)*	
VARYING POWER AND FUEL CONSUMPTION					
193.40 *(144.22)*	2200	12.83 *(48.56)*	0.467 *(0.284)*	15.07 *(2.97)*	Air temperature
168.96 *(125.99)*	2271	11.47 *(43.44)*	0.478 *(0.291)*	14.72 *(2.90)*	78°F *(25°C)*
129.43 *(96.52)*	2310	9.38 *(35.52)*	0.510 *(0.310)*	13.79 *(2.72)*	Relative humidity
87.72 *(65.42)*	2358	7.59 *(28.74)*	0.609 *(0.370)*	11.55 *(2.28)*	30%
---- ----	Unable to run, see note			----	Barometer
0.0 *(0.0)*	2446	3.71 *(14.05)*	---- ----	---- ----	28.77" Hg *(97.43 kPa)*

Maximum Torque - 754 lb.-ft. *(1023 Nm)* at 1354 rpm
Maximum Torque Rise - 63.3%
Torque rise at 1748 engine rpm - 39%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F cool-ing med	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—7th Gear									
163.29 *(121.77)*	14245 *(63.36)*	4.30 *(6.92)*	2196	4.20	0.557 *(0.339)*	12.63 *(2.49)*	195 *(90)*	55 *(13)*	28.88 *(97.80)*
75% of Pull at Maximum Power—7th Gear									
128.57 *(95.87)*	10687 *(47.54)*	4.51 *(7.26)*	2270	2.76	0.597 *(0.363)*	11.79 *(2.32)*	196 *(91)*	63 *(17)*	28.88 *(97.80)*
50% of Pull at Maximum Power—7th Gear									
88.39 *(65.91)*	7110 *(31.63)*	4.66 *(7.50)*	2320	1.68	0.694 *(0.422)*	10.14 *(2.00)*	193 *(89)*	64 *(18)*	28.89 *(97.83)*
75% of Pull at Reduced Engine Speed—9th Gear									
128.80 *(96.04)*	10693 *(47.57)*	4.52 *(7.27)*	1715	2.77	0.476 *(0.290)*	14.76 *(2.91)*	189 *(87)*	63 *(17)*	28.89 *(97.83)*
50% of Pull at Reduced Engine Speed—9th Gear									
88.47 *(65.97)*	7108 *(31.62)*	4.67 *(7.51)*	1752	1.64	0.527 *(0.320)*	13.35 *(2.63)*	185 *(85)*	65 *(18)*	28.90 *(97.83)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				4th Gear					
136.92	19826	2.59	2240	13.35	0.630	11.16	194	48	28.84
(102.10)	*(88.19)*	*(4.17)*			*(0.383)*	*(2.20)*	*(90)*	*(9)*	*(97.66)*
				5th Gear					
154.95	18692	3.11	2209	8.04	0.585	12.02	194	50	28.86
(115.55)	*(83.15)*	*(5.00)*			*(0.356)*	*(2.37)*	*(90)*	*(10)*	*(97.73)*
				6th Gear					
168.23	18336	3.44	2129	7.94	0.551	12.76	193	52	28.87
(125.45)	*(81.56)*	*(5.54)*			*(0.335)*	*(2.51)*	*(90)*	*(11)*	*(97.77)*
				7th Gear					
177.14	18082	3.67	1935	7.08	0.507	13.86	195	54	28.88
(132.09)	*(80.43)*	*(5.91)*			*(0.309)*	*(2.73)*	*(91)*	*(12)*	*(97.80)*
				8th Gear					
179.54	16927	3.98	1798	5.84	0.487	14.45	196	56	28.88
(133.88)	*(75.30)*	*(6.40)*			*(0.296)*	*(2.85)*	*(91)*	*(13)*	*(97.80)*
				9th Gear					
181.66	14629	4.66	1800	4.48	0.479	14.68	196	56	28.88
(135.46)	*(65.07)*	*(7.49)*			*(0.291)*	*(2.89)*	*(91)*	*(13)*	*(97.80)*
				10th Gear					
182.55	12719	5.38	1796	3.55	0.475	14.80	196	58	28.87
(136.13)	*(56.58)*	*(8.66)*			*(0.289)*	*(2.92)*	*(91)*	*(14)*	*(97.77)*
				11th Gear					
180.52	10929	6.19	1789	2.86	0.481	14.63	197	60	28.87
(134.62)	*(48.61)*	*(9.97)*			*(0.292)*	*(2.88)*	*(92)*	*(16)*	*(97.77)*
				12th Gear					
178.46	9386	7.13	1787	2.38	0.477	14.75	198	61	28.87
(133.08)	*(41.75)*	*(11.48)*			*(0.290)*	*(2.91)*	*(92)*	*(16)*	*(97.77)*
				13th Gear					
176.49	7440	8.90	1777	1.77	0.487	14.47	198	62	28.87
(131.61)	*(33.10)*	*(14.32)*			*(0.296)*	*(2.85)*	*(92)*	*(17)*	*(97.77)*

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
At 75% load in 9th gear	74.4
Bystander in 18th gear	86.4

TIRES, BALLAST AND WEIGHT	**With Ballast**	**Without Ballast**
Rear Tires - No., size, ply & psi *(kPa)*	Four 520/85R42;**;10*(70)*	Two 520/85R42;**;16*(110)*
Ballast - Duals (total)	1950 lb *(885 kg)*	None
- Cast Iron (total)	1520 lb *(689 kg)*	None
Front Tires - No., size, ply & psi *(kPa)*	Two 420/90R30;**;16*(110)*	Two 420/90R30;**;13*(90)*
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1320 lb *(599 kg)*	None
Height of Drawbar	17.5 in *(445 mm)*	17.0 in *(430 mm)*
Static Weight with operator - Rear	16415 lb *(7445 kg)*	13245 lb *(6007 kg)*
- Front	8890 lb *(4033 kg)*	7270 lb *(3298 kg)*
- Total	25305 lb *(11478 kg)*	20515 lb *(9305 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: This tractor has an electronic control that disengages the PTO when the PTO speed exceeds 1200 rpm.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 110°F *(44°C)*. The pull in 3rd gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code Procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1830**, Nebraska Summary 418, December15, 2003.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
W.P. Campbell
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE

BALLASTED - 1800 ENGINE RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				3rd Gear					
158.07 *(117.87)*	25217 *(112.17)*	2.35 *(3.78)*	2201	7.84	0.582 *(0.354)*	12.09 *(2.38)*	195 *(90)*	50 *(10)*	28.84 *(97.66)*
				4th Gear					
170.51 *(127.15)*	24466 *(108.83)*	2.61 *(4.21)*	2106	6.65	0.547 *(0.333)*	12.87 *(2.53)*	195 *(91)*	52 *(11)*	28.84 *(97.66)*
				5th Gear					
175.50 *(130.87)*	24091 *(107.16)*	2.73 *(4.40)*	1914	6.40	0.511 *(0.311)*	13.77 *(2.71)*	196 *(91)*	54 *(12)*	28.84 *(97.66)*
				6th Gear					
179.29 *(133.70)*	22455 *(99.89)*	2.99 *(4.82)*	1803	5.04	0.484 *(0.295)*	14.52 *(2.86)*	196 *(91)*	55 *(13)*	28.84 *(97.66)*
				7th Gear					
182.53 *(136.11)*	19335 *(86.01)*	3.54 *(5.70)*	1799	3.73	0.477 *(0.290)*	14.75 *(2.91)*	197 *(91)*	56 *(13)*	28.85 *(97.70)*
				8th Gear					
182.27 *(135.92)*	16712 *(74.34)*	4.09 *(6.58)*	1801	2.99	0.477 *(0.290)*	14.76 *(2.91)*	197 *(92)*	57 *(14)*	28.85 *(97.70)*
				9th Gear					
182.06 *(135.76)*	14402 *(64.06)*	4.74 *(7.63)*	1801	2.48	0.476 *(0.290)*	14.77 *(2.91)*	197 *(92)*	59 *(15)*	28.85 *(97.70)*
				10th Gear					
182.28 *(135.93)*	12517 *(55.68)*	5.46 *(8.79)*	1800	2.02	0.472 *(0.287)*	14.90 *(2.94)*	198 *(92)*	61 *(16)*	28.85 *(97.70)*
				11th Gear					
177.87 *(132.64)*	10639 *(47.33)*	6.27 *(10.09)*	1795	1.67	0.485 *(0.295)*	14.51 *(2.86)*	198 *(92)*	62 *(17)*	28.85 *(97.70)*
				12th Gear					
175.83 *(131.12)*	9118 *(40.56)*	7.23 *(11.64)*	1799	1.33	0.487 *(0.296)*	14.45 *(2.85)*	198 *(92)*	64 *(18)*	28.86 *(97.70)*
				13th Gear					
172.59 *(128.70)*	7179 *(31.93)*	9.02 *(14.51)*	1794	1.01	0.500 *(0.304)*	14.12 *(2.78)*	198 *(92)*	66 *(19)*	28.86 *(97.70)*

THREE POINT HITCH PERFORMANCE(OECD Static Test)

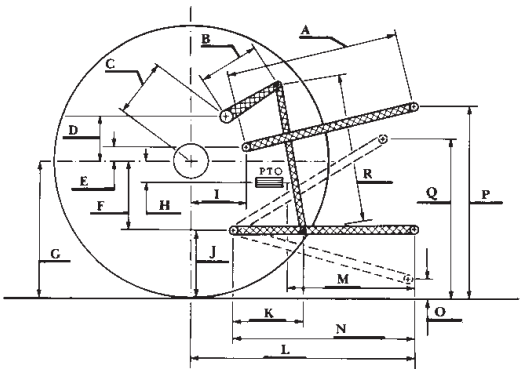
CATEGORY: III		
Quick Attach: Yes		High Lift Option
Maximum force exerted through whole range:	12802 lb *(56.9 kN)*	16375 lb *(72.8 kN)*
i) Opening pressure of relief valve:	NA	NA
		Mega flow pump
Sustained pressure at compensator cutoff:	3070 psi *(212 bar)*	2770 psi *(191 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	38.7 GPM *(146.5 l/min)*	31.2 GPM *(118.1 l/imn)*
Combined flow:	69.9 GPM *(264.6 l/min)*	
iii) Pump delivery rate at maximum hydraulic power:	37.6 GPM *(142.3 l/min)*	31.4 GPM *(118.9 l/min)*
Delivery pressure:	2895 psi *(200 bar)*	2560 psi *(177 bar)*
Power:	63.5 HP *(47.4 kW)*	46.9 Hp *(35.0 kW)*

THREE POINT HITCH PERFORMANCE(Standard lift cylinders)

Observed Maximum Pressure psi. *(bar)*	3260 *(225)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	150 *(65)*
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test—System pressure 2935 psi *(202 Bar)*

Hitch point distance to ground level in. *(mm)*	8.7 *(222)*	16.1 *(409)*	23.9 *(607)*	31.9 *(810)*	39.9 *(1013)*
Lift force on frame lb	23888	19088	17829	16837	15402
" " " " " " " *(kN)*	*(106.3)*	*(84.9)*	*(79.3)*	*(74.9)*	*(68.5)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	*mm*	inch	*mm*
A	28.2	*718*	28.5	*724*
B	20.5	*520*	20.5	*520*
C	22.9	*581*	22.9	*581*
D	20.7	*525*	20.7	*525*
E	10.5	*266*	10.5	*266*
F	15.7	*400*	15.7	*400*
G	36.4	*925*	36.4	*925*
H	3.5	*90*	3.5	*90*
I	20.9	*530*	20.9	*530*
J	20.7	*525*	20.7	*525*
K	30.2	*768*	30.2	*768*
L	46.1	*1170*	46.1	*1170*
*L'	50.7	*1287*	--	--
M	20.1	*511*	20.1	*511*
N	38.2	*970*	38.2	*1089*
O	9.0	*230*	8.0	*203*
P	47.6	*1210*	40.7	*1035*
Q	40.7	*1035*	40.0	*1016*
R	39.2	*995*	39.9	*1013*

*L' to Quick Attach ends

NEW HOLLAND TG230 DIESEL

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